

Oscilloscopes, logic analyzers ScopeDAQ:

ScopeDAQ is a two-channel digital oscilloscope with maximum sampling frequency of 200 MHz and 8-bit converter resolution. The user can take advantage of 2 analog channels for connecting standard oscilloscope probes. Maximum sampling frequency using two channels is 200MHz. Six measurement ranges - from 50mV/division to 2V/division (1:1 probe) - allows to measure signals of wide range of voltages. With this degree of division of the probe, the measuring range equals 20V. The basic version of the device has a buffer of size of 256K samples per channel, but it can be increased to 2M, giving the possibility of recording more data.



Key features

- 2 analog channels
- Maximum sampling frequency of 200MHz per each channel
- Analog bandwidth of input path: 100MHz
- Voltage range of analog path: +/-20V (1:1 probe)
- ADC converter resolution - 8 bits
- Available capacity of internal memory: 2M*, 1M*, 512k*, 256k samples per channel (* - optional)
- Function of recorder Logger allowing for continuous recording to PC with a sampling rate of up to approximately 5 MHz
- An extensive two-level trigger system
- Ability to cooperate with an external clock
- Built-in square-wave signal generator with adjustable frequency and amplitude
- The software allows for creation of a measurement project remembering any number of device configuration settings
- User-friendly, stylish and ergonomic user interface

Navigator of measuring windows

DAQ2 software has a navigation window for running measuring windows for different devices of DAQ2 family. Thanks to the specialised navigation window, the user can make measurements with several DAQ2 devices at once or run a single device in several measurement modes simultaneously, with different configuration settings.

Individual configuration settings can be saved as separate files on the disk, so that they can be easily restored and the device can be restarted according to the priorly saved configuration. In the navigation window, using the device selector, it is possible to start a measuring window in one of available modes. The device selector shows all DAQ2 devices which are connected to a computer at a given time, including any available options and the size of RAM memory for each device. In addition, in this window there is an information console that records all actions that are performed between connected devices.

Signal measurements window

DAQ2 software has a window for observation of analog signals. Very ergonomic set of measurement cursors allows for flexible measurements on horizontal and vertical axes.

Additionally, various magnifications (Zoom) of the recorded signal can be carried out as well as access to the analog* level trigger can be gained simultaneously for 'A' and 'B' channel.

The combined window allows for synchronous observation of recorded signal waveforms and the relationship between them. Moreover, signal from the Logger module is displayed here.

FFT measurement window

DAQ2 software facilitates easy switch to the FFT window of the measured signal.

The FFT is used to observe FFT charts for two analog input paths. In addition, measurements can be made using different time windows such as:

Rectangle, Triangle, Flat top, Hamming, Blackman, Gaussian, Hanning, Harris

In the FFT window it is possible to make band measurements between any pair of cursors on the graph. In case of these measurements, you can determine the signal effective value in a given bandwidth.

Triggering conditions

ScopeDAQ works in the following operating modes:

- Auto - digital waveform is generated and recorded cyclically
- Single - digital waveform is generated and recorded one time after the trigger
- Repeat - digital waveform is generated and recorded cyclically after the trigger
- External - digital waveform is generated according to the external clock signal sent to the 'AUX' input

The device trigger system device is a 2-level system. Each trigger level can be set with independent triggering conditions. Additionally, the trigger can be delayed (Capture Delay) after the appearance of a specific trigger by setting the time interval measured from appearance of a specified triggering condition.

The trigger can be set to one of two levels: '1' and '2':

- Level1 - trigger according to Level '1' setting
- Level2 - trigger according to Level '2' setting
- Level1 or Level2 - trigger according to Level '1' setting or Level '2' setting
- Level1 then Level2 - trigger according to specified order: level '1' and then level '2'. In addition, it is possible to set time interval between Level '1' and Level '2'.

Available trigger modes within each level:

- Analog level 'A' - Trigger after edge detection on analog channel 'A'
- Analog level 'B' - Trigger after edge detection on analog channel 'B'
- External - Trigger with edge on extra I / O (AUX)
- Force - 'manual' trigger forced by the user at any time

Under normal operation the user can take advantage of the Pre/post trigger slide located in the Options tab, which divides memory intended for recording the measured signal into two parts. The Pre trigger part is used to record signal before a particular trigger condition appears; the Post trigger part is used to record signal after a defined trigger condition appears.

Logger, analog signal recorder

Thanks to the unique solutions implemented in the FPGA systems, ScopeDAQ allows for continuous recording of analog signals to the computer hard drive with a sampling rate up to 5MHz. It depends on the size of memory inside the analyser, as well as the capabilities of the PC, to which the device is connected. Recording can be completed automatically after a certain period of time, when an error occurs or a specific disk space is used.

The rate of transfer of data to the computer and the time of recording of data to the hard drive is dependent on computer parameters and the operating system. During recording, the user can set parameters of refresh rate of the screen displaying the signal. In addition, the measurement time and the current logger's file size is displayed on a regular basis.

After the login process, it is possible to view the recorded file with samples of the signal for thorough analysis. Recording can be carried out in any of the available modes of operation.

AUX input and output

ScopeDAQ has a configurable 'AUX' terminal, which can be both input and output, depending on configuration set by the user.

The 'AUX' output mode:

- Generator output - rectangular signal generator output signal of adjustable frequency and amplitude (3.3V or 2.5V)
- Trigger output - internal trigger signal output
- Buffer full, post trigger - output issuing signal, which indicates that signal recording memory is full

The 'AUX' input mode:

- Trigger input - input for external trigger, set both for the rising and falling edge of the signal
- External generator clock - input for external sampling clock, according to which signals are to be recorded

'AUX' input output is a convenient solution in cases when it is necessary to quickly produce a signal of known frequency and amplitude in the measurement system, or to couple the device with another DAQ2 device or another measurement system.

PC software

Software DAQ2 has an ergonomic and configurable user interface, by means of which the user is able to operate several devices of the family simultaneously. This is particularly important if the system is fairly large. Each device can operate in independent modes and include any configuration settings; the settings can be saved in any file for future reference. In addition, as part of a connected device, the user can run them in a number of available configurations.

Saving data to files

Recording data representing the measured electrical signals can be realized on two ways. The first is the registration data directly to a computer hard drive in a continuous mode, using Logger. Another method is to record the data measured by the device and stored in the internal memory of ScopeDAQ. In this case, the data stored in the buffer can be saved in the following formats:

* .dad, * .csv, * .txt, * .jpg, * .png

The data stored in files * .txt and * .csv file can be easily imported and analysed in external programs such as LABWieV, or other applications, depending on the needs of the user.